

Appl. No. 10/774,166
Amtd. Dated 07-29-2005
Reply to Office action of 06-14-2005

Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (original) A method comprising:
providing a first wafer having a stack structure of a first base substrate, a layer of relaxed film, and a first layer of strained film,
depositing a layer of oxide onto the layer of strained film to provide an adhesion surface to the first wafer;
providing a second wafer, the second wafer being a silicon on insulation (SOI) wafer having a stack structure of a second base substrate and a layer of oxidized film;
attaching the first and second wafers; and
heating the first and second wafers at a first temperature to cause a silicon dioxide (SiO_2) adhesion of the first substrate to the second substrate.
2. (original) The method of claim 1 further comprising:
implanting hydrogen onto the first wafer before depositing the layer of oxide onto the second layer of strained film to create an embrittled region in the layer of relaxed film.
3. (original) The method of claim 2 further comprising:
heating the first and second wafers at a second temperature to delaminate the two wafers along the embrittled region to form the second wafer having the layer of relaxed film.
4. (original) The method of claim 3 further comprising:
etching the relaxed film on the surface of the second wafer to expose the strained film.
5. (original) The method of claim 1 wherein the first and second base substrates are made of silicon material.

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6. (previously presented) The method of claim 1 wherein the layer of relaxed film is a relaxed Silicon Germanium (SiGe) layer having a thickness in a range of approximately 0.1 μ m to 3.0 μ m.

7. (original) The method of claim 1 wherein the layer of oxide is deposited at a thickness range of approximately 50 to 3000A.

8. (original) The method of claim 2 wherein the hydrogen is implanted at an energy range of approximately 1 to 20keV.

9. (original) The method of claim 3 wherein the second temperature is higher than the first temperature.

10. (original) The method of claim 3 wherein the first temperature is in a range of approximately 100 °C to 300 °C.

11. (original) The method of claim 3 wherein the second temperature is in a range of 400 °C to 600 °C.

12. (original) The method of claim 1 further comprising:
etching the first base substrate, and the layer of relaxed film to result in the strain of film on the surface of the SOI wafer.

13. (original) The method of claim 12 wherein the etching of the first layer of strained film comprises wet etching the layer of relaxed film.

14-19. (canceled)

20. (withdrawn) A method comprising:
forming a relaxed layer on a silicon layer;
forming a strained layer on the relaxed layer;

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creating an embrittled region in one of the relaxed and strained layers; and
transferring the strained layer to top of a wafer by heat treatment, the wafer having a base
substrate and an oxidized film.

21. (withdrawn) The method of claim 20 wherein forming a relaxed layer comprises:
forming a relaxed silicon germanium (SiGe) layer having a thickness in a range of $0.1\mu\text{m}$
to $3.0\mu\text{m}$.

22. (withdrawn) The method of claim 20 wherein creating comprises:
creating the embrittled region by an ion implantation.

23. (withdrawn) The method of claim 20 wherein creating comprises:
creating the embrittled region by an ion implantation using an energy range of
approximately 1 keV to 20 keV.

24. (withdrawn) The method of claim 20 wherein creating comprises:
creating the embrittled region by an ion implantation using a dose range of approximately
 $1\text{E}16/\text{cm}^3$ to $1\text{E}18/\text{cm}^3$.

25. (withdrawn) The method of claim 20 wherein transferring comprises:
bonding the strained layer to the oxidized wafer by a first heat treatment in a range of
approximately 100°C to 300°C ; and
separating the strained layer from the relaxed layer at the embrittled region by a second
heat treatment in a range of approximately 400°C to 600°C .